

IN THE CLAIMS:

Claims 1-15 (cancelled)

16. (currently amended) A method of recovering base metal from a tailings dump which contains bacteria which are capable of oxidizing sulphide minerals in the dump, the method including the steps of:

- (a) aerating a surface layer of the dump by agitating or mechanically loosening the surface layer;
- (b) providing conditions favourable for oxidation of sulphide minerals by the bacteria:
  - (1) adjusting the pH of the surface layer to a level in the range of from 1.3 to 2.0, and
  - (2) adjusting the moisture content of the surface layer to a value of from 16% to 20%;
- (c) allowing oxidation of the sulphide minerals by the bacteria to take place for a controlled period resulting in an oxidised surface layer;
- (d) removing the oxidised surface layer after the controlled period and adding water thereto to form a slurry;
- (e) separating the slurry into solids and a solution wherein the slurry is directed to at least one tank in which agitation of the slurry takes place; and
- (f) recovering base metal from the solution using solvent extraction or ion exchange techniques.

17. (previously presented) The method according to claim 16 wherein the surface layer is aerated by ploughing the surface layer to a depth of between 0.5 to 1.0 metres.

18. (previously presented) The method according to claim 16 wherein the pH is adjusted by adding sulphuric acid to the surface layer.

19. (previously presented) The method according to claim 16 wherein the said controlled period, in step (c), is at least four weeks.

20. (previously presented) The method according to claims 16 wherein the oxidised surface layer is removed by mechanical means or by the use of water jets.

21. (currently amended) The method according to claim 16 wherein ~~the slurry is directed to at least one tank in which agitation of the slurry takes place~~ base metal in sulphate form in solution is separated from the slurry.

22. (currently amended) A method of recovering base metal from a tailings dump which contains bacteria which are capable of oxidizing sulphide minerals in the dump, the method including the steps of:

- (a) aerating a surface layer of the dump by agitating or mechanically loosening the surface layer;
- (b) providing conditions favourable for oxidation of sulphide minerals by the bacteria;

- (1) adjusting the pH of the surface layer to a level in the range of from 1.3 to 2.0, and
  - (2) adjusting the moisture content of the surface layer to a value of from 16% to 20%;
  - (c) allowing oxidation of the sulphide minerals by the bacteria to take place for a controlled period resulting in an oxidised surface layer;
  - (d) removing the oxidised surface layer after the controlled period and adding water thereto to form a slurry;
  - (e) separating the slurry into solids and a solution; and
  - (f) recovering base metal from the solution using solvent extraction or ion exchange techniques
- ~~The method according to claim 16 wherein base metal in sulphate form in solution is separated from the slurry.~~

Claim 23 (cancelled)

24. (currently amended) A method of recovering base metal from a tailings dump which contains bacteria which are capable of oxidizing sulphide minerals in the dump, the method including the steps of:

- (a) aerating a surface layer of the dump by agitating or mechanically loosening the surface layer;
- (b) providing conditions favourable for oxidation of sulphide minerals by the bacteria:
  - (1) adjusting the pH of the surface layer to a level in the range of from 1.3 to 2.0, and

(2) adjusting the moisture content of the surface layer to a value of  
from 16% to 20%;

(c) allowing oxidation of the sulphide minerals by the bacteria to take place  
for a controlled period resulting in an oxidised surface layer;

(d) removing the oxidised surface layer after the controlled period and  
adding water thereto to form a slurry;

(e) separating the slurry into solids and a solution; and

(f) recovering base metal from the solution using solvent extraction or ion  
exchange techniques

~~The method according to claim 16 wherein said~~  
base metal is copper.

25. (previously presented) The method according to claim 24 wherein the  
tailings dump results from the grinding of copper ores followed by a flotation process.

26. (previously presented) A copper recovery process wherein copper ore is  
ground and then subjected to a flotation process which results in tailings which are  
transferred to a tailings pile, and wherein the tailings pile contains bacteria which are  
capable of oxidising sulphide minerals in the tailings pile, the process including the  
steps of subjecting the tailings pile to the following:

- a) loosening and aerating of a surface layer of the pile;
- b) adjusting the pH of the surface layer to a value in the range of from 1.3  
to 2.0;
- c) adjusting the moisture content of the pile to lie in a range of from 16%  
to 20%;
- d) allowing oxidation by the bacteria of at least sulphide

minerals in the surface layer for a controlled period;

- e) removing the surface layer thereafter;
- f) mixing the surface layer with water to form a slurry which is conveyed to at least one agitation tank;
- g) separating the slurry in the tank into solids and a solution from which copper is extracted using solvent extraction or ion exchange techniques.

27. (new) The method according to claim 22 wherein the surface layer is aerated by ploughing the surface layer to a depth of between 0.5 to 1.0 metres.

28. (new) The method according to claim 22 wherein the pH is adjusted by adding sulphuric acid to the surface layer.

29. (new) The method according to claim 22 wherein the said controlled period, in step (c), is at least four weeks.

30. (new) The method according to claim 22 wherein the oxidised surface layer is removed by mechanical means or by the use of water jets.

31. (new) The method according to claim 22 wherein the slurry is directed to at least one tank in which agitation of the slurry takes place.

32. (new) The method according to claim 22 wherein said base metal is copper.

33. (new) The method according to claim 32 wherein the tailings dump results from the grinding of copper ores followed by a flotation process.

34. (new) The method according to claim 24 wherein the surface layer is aerated by ploughing the surface layer to a depth of between 0.5 to 1.0 metres.

35. (new) The method according to claim 24 wherein the pH is adjusted by adding sulphuric acid to the surface layer.

36. (new) The method according to claim 24 wherein the said controlled period, in step (c), is at least four weeks.

37. (new) The method according to claims 24 wherein the oxidised surface layer is removed by mechanical means or by the use of water jets.

38. (new) The method according to claim 24 wherein the slurry is directed to at least one tank in which agitation of the slurry takes place.

39. (new) The method according to claim 24 wherein base metal in sulphate form in solution is separated from the slurry.

40. (new) The method according to claim 24 wherein the tailings dump results from the grinding of copper ores followed by a flotation process.

41. (new) The method according to claim 16 wherein said base metal is copper.

42. (new) The method according to claim 41 wherein the tailings dump results from the grinding of copper ores followed by a flotation process.